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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/608,276	06/27/2003	Michael A. Centanni	ST8010US	8508
22203	7590	05/10/2006	EXAMINER	
KUSNER & JAFFE HIGHLAND PLACE SUITE 310 6151 WILSON MILLS ROAD HIGHLAND HEIGHTS, OH 44143			SINES, BRIAN J	
			ART UNIT	PAPER NUMBER
			1743	

DATE MAILED: 05/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/608,276

Applicant(s)

CENTANNI, MICHAEL A.

Examiner

Brian J. Sines

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 23 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7, 10, 12-19, 22, 24, 45-54, 59 and 60 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 10, 12-19, 22, 24, 45-54, 59 and 60 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1 – 7, 10 and 12 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 – 20 of copending Application No. 11/116,574. Although the conflicting claims are not identical, they are not patentably distinct from each other because they appear to be directed to the same sensing device invention.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

The sensing element comprising an electroactive material comprising an electroactive polymer, such as polyacetylene, appears to be identical to the host material recited in the copending application. The means for determining a measured value of a change in an electrical

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property of the electroactive material appears to be identical to the measuring means in the copending application. The dopant appears to be identical to the additive recited in the copending application. The memory means which incorporate the use of stored slope value data appear to be identical in both applications.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

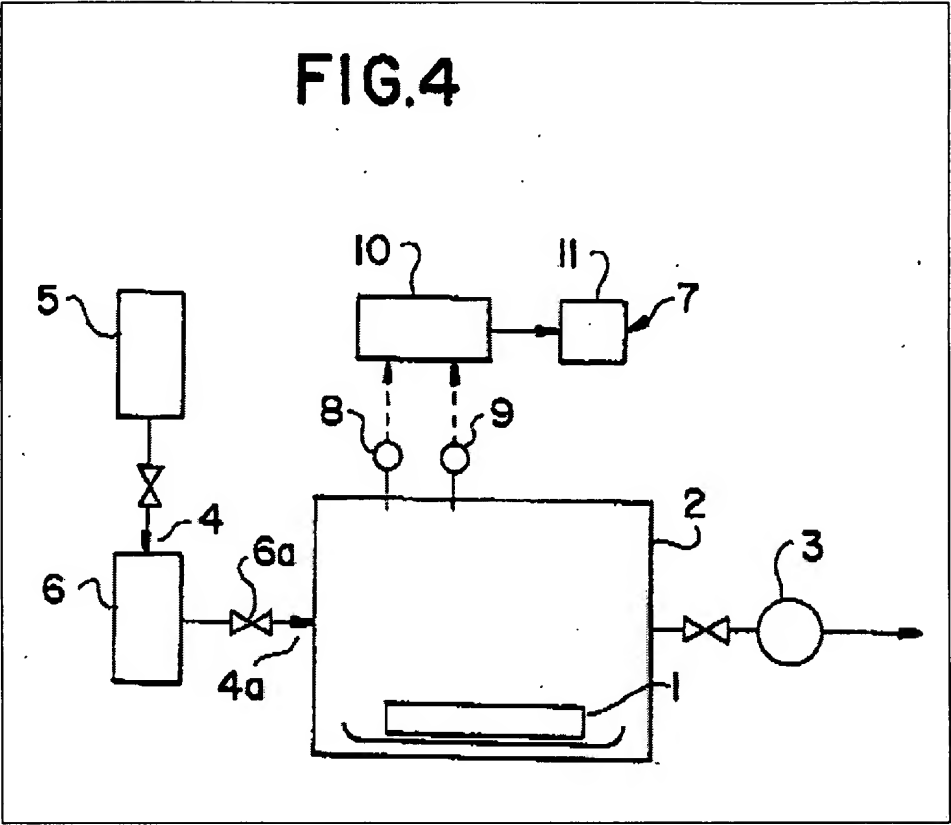
1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

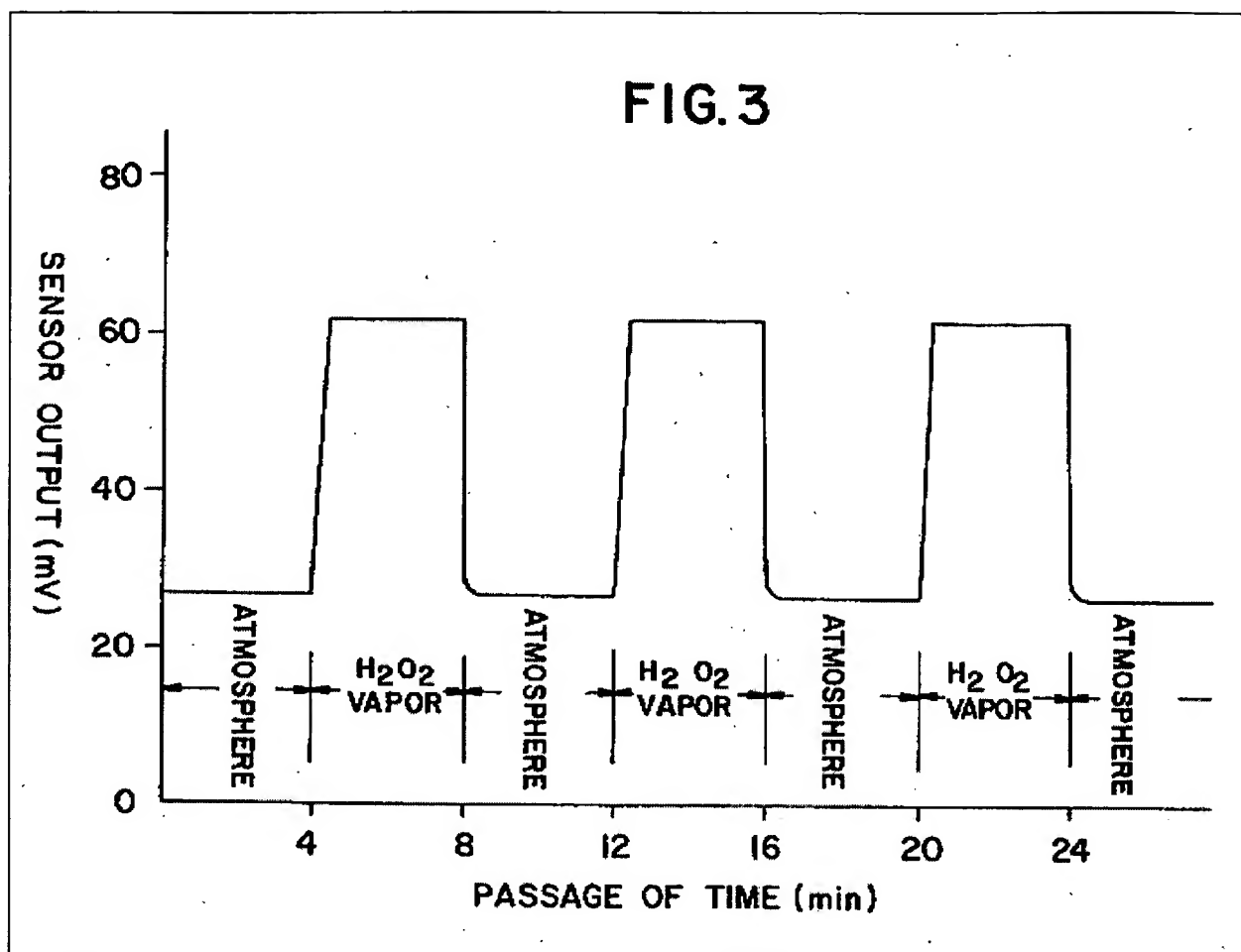
1. Claims 1, 2, 10, 12, 13, 22, 24, 45 – 47 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando et al. (U.S. Pat. No. 5,608,156 A) (hereinafter “Ando”) in view of Guiseppi-Elie (U.S. Pat. No. 5,766,934 A) (hereinafter “Guiseppi-Elie ‘934”).

Regarding claims 1 and 2, Ando anticipates an apparatus for sensing a concentration of vaporized hydrogen peroxide in a biocontamination deactivation or sterilization process on a real-time basis, comprising: a chamber (treatment vessel 2); a sensing element comprising of an electroactive material (metal oxide semiconductor gas sensor 8 whose electrical conductivity

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changes in contact with the hydrogen peroxide vapor in the chamber) (see col. 5, lines 36 - 65); and a concentration detection system (e.g., concentration detecting apparatus 7, computing unit 10 & concentration indicator 11) comprising: means for determining a measured value indicative of a change in an electrical property of the electroactive material as a function of time exposure of the electroactive material to the hydrogen peroxide vapor in the chamber, wherein the change in electrical property varies in accordance with a change in concentration of the hydrogen peroxide vapor in the chamber; memory means for storing predetermined data indicative of the electrical property as a function of time exposure of the electroactive material to hydrogen peroxide vapor at known concentrations; and means for determining a concentration of the hydrogen peroxide vapor corresponding to the measured value using the predetermined data stored in the memory means (see col. 4, line 55 – col. 11, line 6; figure 4). Ando teaches that the computing unit (10) receives the output signal from the sensor (8), determines a measured value for the sensor response, and the output from the sensor (8) is converted to the concentration of the hydrogen peroxide vapor for indication as a function of time (see figures 2 – 6; col. 5, line 36 – col. 6, line 43). Ando teaches that the computing unit (10) also stores predetermined correction or calibration data (i.e., a conversion rate) (see col. 8, lines 52 – 67). Ando teaches that the concentration indicator (11) uses predetermined data obtained in advance by experiments (see col. 5, line 66 – col. 6, line 43; col. 7, line 62 – col. 8, line 8).



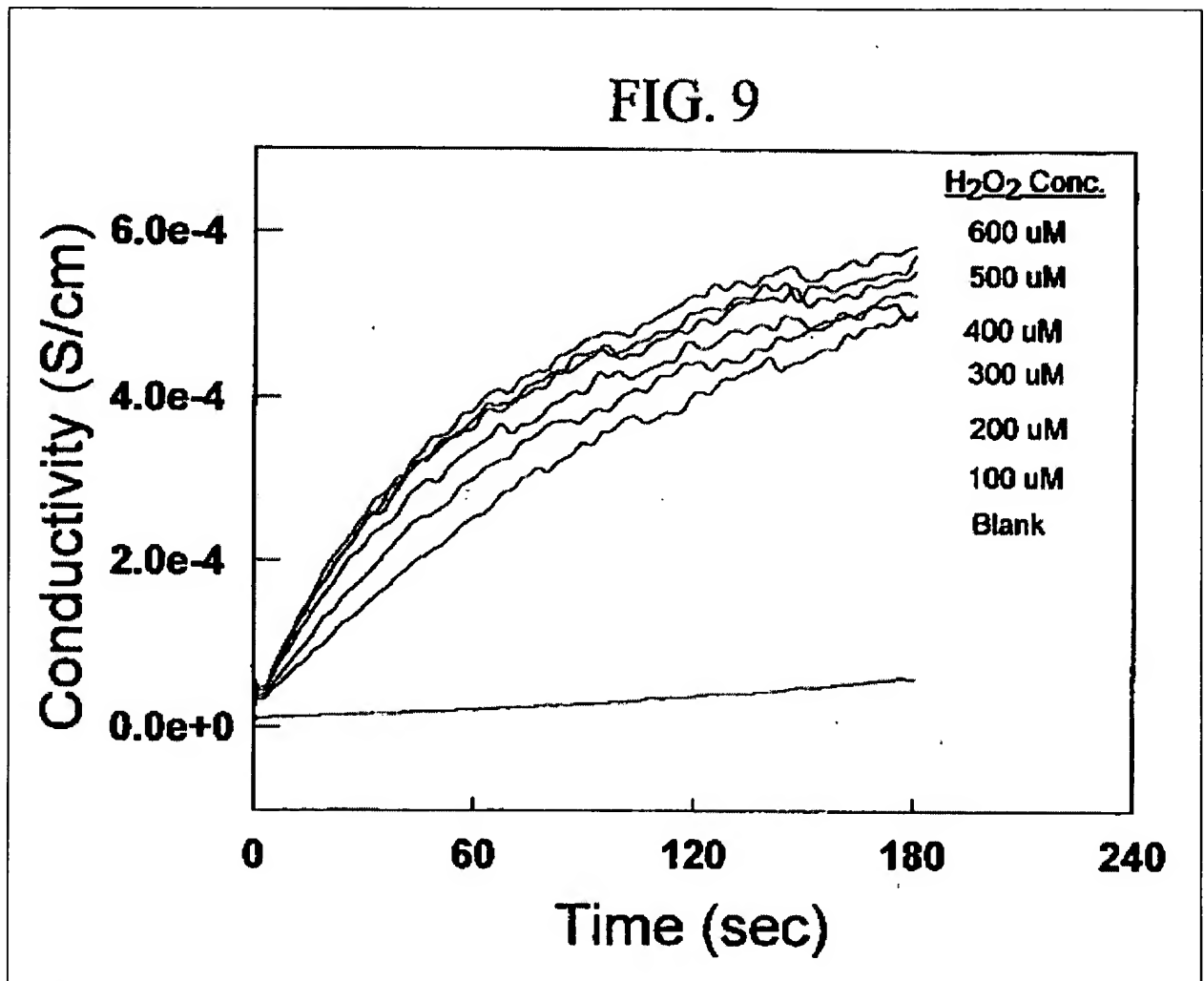


Ando does not specifically teach the incorporation of a memory means for storing a plurality of predetermined slope values indicative of changes in the electroactive property as a function of time exposure of the electroactive material to vaporized hydrogen peroxide at known concentrations. Ando does not specifically teach the incorporation of a means for determining a concentration of the vaporized hydrogen peroxide corresponding to the measured value using the plurality of predetermined slope values stored in the memory means. Ando does not teach the incorporation of an electroactive polymer sensing material.

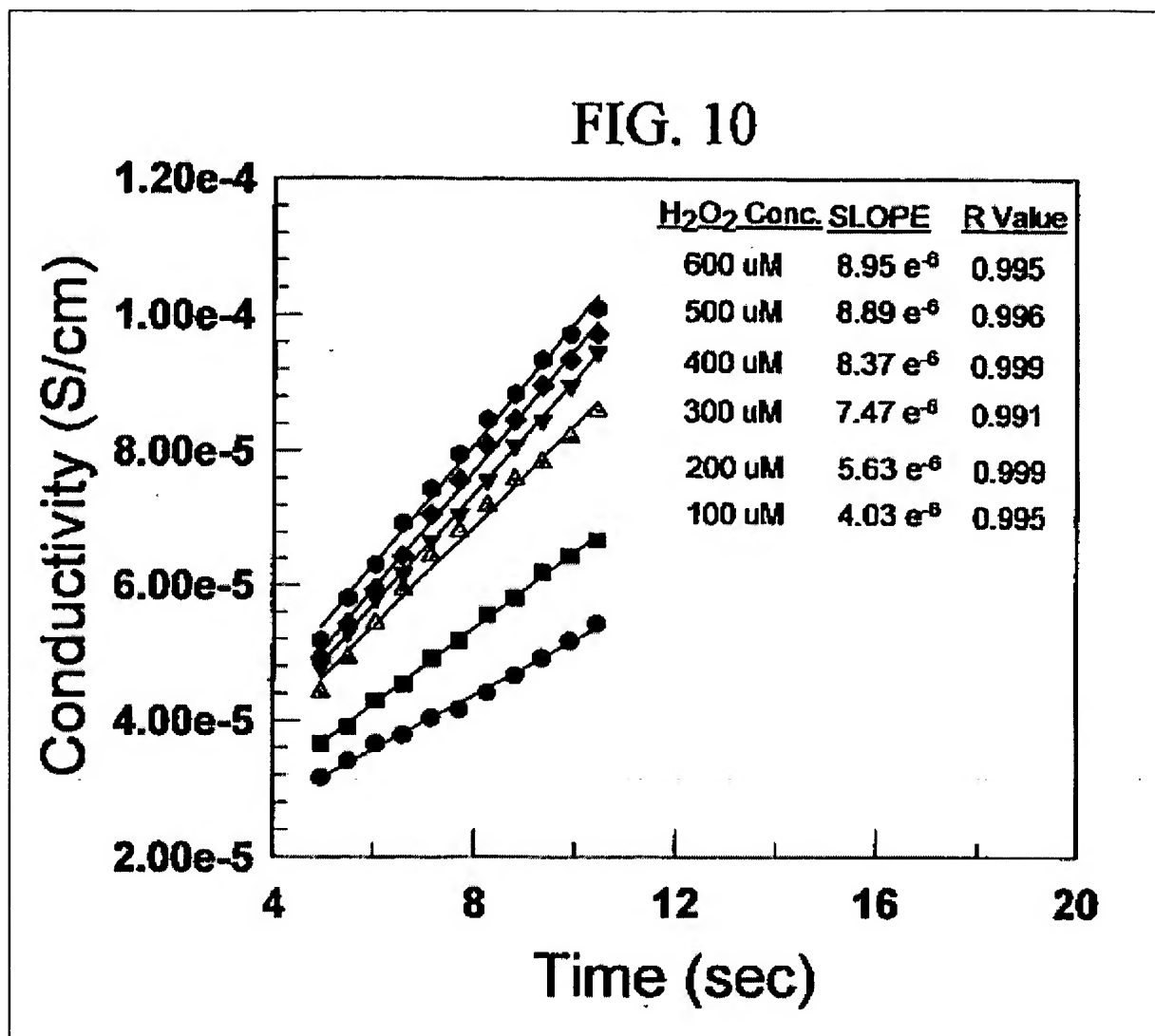
Guisseppi-Elie '934 teaches a chemical sensor for detecting hydrogen peroxide using an electroconductive polymer (see col. 21, line 26 – col. 22, line 62). As shown in figures 9 and 10,

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the sensor yields different response curves having different slope values depending on the initial concentration of hydrogen peroxide ( $\text{H}_2\text{O}_2$ ) (see col. 22, lines 41 – 62). The use of predetermined calibration response curves with sensing devices for facilitating effective sensor operation and concentration detection is very well known in the art (see MPEP § 2144.03).







Hence, as evidenced by Guiseppi-Elie '934, a person of ordinary skill in the art would accordingly have had a reasonable expectation for success in using a sensor incorporating the use of an electroactive polymer, and including its associated operation and response characteristics, for sensing hydrogen peroxide. The Court has held that the selection of a known material, which is based upon its suitability for the intended use, is within the ambit of one of ordinary skill in the art. See *In re Leshin*, 125 USPQ 416 (CCPA 1960) (see MPEP § 2144.07). The Court has held that the prior art can be modified or combined to reject claims as *prima facie* obvious as long as

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there is a reasonable expectation of success. See *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986) (see MPEP § 2143.02). Thus, it would have been obvious to a person of ordinary skill in the art to incorporate a memory means for storing a plurality of predetermined slope values indicative of changes in the electroactive property as a function of time exposure of the electroactive material to vaporized hydrogen peroxide at known concentrations. In addition, It would have been obvious to a person of ordinary skill in the art to incorporate a means for determining a concentration of the vaporized hydrogen peroxide corresponding to the measured value using the plurality of predetermined slope values stored in the memory means. Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate the use of a sensor for detecting hydrogen peroxide with the disclosed sensing apparatus as claimed.

Regarding claim 10, Ando also teaches that computing unit (10) functions as a data comparison means during operation (see col. 9, line 58 – col. 10, line 31).

Regarding claim 12, as shown in figure 5, Ando indicates that the computing unit (10) also functions as a means for interpolating and extrapolating data (see col. 9, line 58 – col. 10, line 62).

Regarding claims 13, 22, 24, 45 – 47 and 59, as discussed above, the cited prior art teaches all of the positively recited structure of the apparatus provided in the claimed method, which merely recites the conventional operation of that apparatus. Therefore, it would have been obvious to a person of ordinary skill in the art to perform the method recited in the instant claims upon the apparatus taught by the cited prior art, as such is the intended operation of that apparatus.

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2. Claims 3 – 5, 14 – 17, 48 – 52 and 60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando and Guiseppi-Elie '934, as applied to the claims above, and further in view of Guiseppi-Elie (U.S. Pat. No. 5,352,574 A) (hereinafter "Guiseppi-Elie '574").

Regarding claim 3, Ando and Guiseppi-Elie '934 do not specifically teach the incorporation of an electroactive polyacetylene polymer with the sensing element. As discussed above, Ando does teach the use of a metal oxide semiconductor gas sensor for sensing hydrogen peroxide vapor (see col. 5, lines 36 – 65). Guiseppi-Elie '934 does teach the use of an electroactive polymer for sensing hydrogen peroxide. Guiseppi-Elie '574 does teach a sensing apparatus for determining the concentration of hydrogen peroxide comprising: a sensing element comprising an electroactive material (e.g., a polymeric film comprising polyacetylene deposited on interdigitated grid area A); and a concentration determination means, which is based upon change in electrical conductivity (see col. 6, lines 14 – 28; col. 7, lines 3 – 11; figure 3). Hence, as shown by Guiseppi-Elie '574, a person of ordinary skill in the art would have had a reasonable expectation for success in using polyacetylene as a sensing material for detecting hydrogen peroxide. The Court has held that the selection of a known material, which is based upon its suitability for the intended use, is within the ambit of one of ordinary skill in the art. See *In re Leshin*, 125 USPQ 416 (CCPA 1960) (see MPEP § 2144.07). The Court has held that the prior art can be modified or combined to reject claims as *prima facie* obvious as long as there is a reasonable expectation of success. See *In re Merck & Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986) (see MPEP § 2143.02). Therefore, it would have been obvious to a person of ordinary skill in the art to incorporate a sensor comprising an electroactive polyacetylene polymer for sensing hydrogen peroxide vapor with the disclosed apparatus.

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Regarding claims 4 and 5, Guiseppi-Elie '574 further teaches the incorporation of dopants, such as iodine (see col. 3, lines 1 – 18).

Regarding claim 48, Guiseppi-Elie '574 indicates that the disclosed sensing apparatus can detect bromine (see col. 3, lines 1 – 18).

Regarding claim 60, polyacetylene is well known in the art to be semicrystalline, thus comprising both crystalline and noncrystalline phases, and therefore containing amorphous regions (see MPEP § 2144.03).

Regarding claims 14 – 17, 48 – 52 and 60, as discussed above, the cited prior art teaches all of the positively recited structure of the apparatus provided in the claimed method, which merely recites the conventional operation of that apparatus. Therefore, it would have been obvious to a person of ordinary skill in the art to perform the method recited in the instant claims upon the apparatus taught by the cited prior art, as such is the intended operation of that apparatus.

3. Claims 6, 7, 18, 19, 53 and 54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ando, Guiseppi-Elie '934 and Guiseppi-Elie '574, as applied to the claims above, and further in view of Nahass et al. (U.S. Pat. No. 5,651,922 A) (hereinafter "Nahass").

Regarding claims 6 and 7, the cited prior art do not specifically teach the incorporation of a pitch-based carbon/graphite fiber material. Guiseppi-Elie '574 does teach the incorporation of a bromine dopant (see col. 3, lines 4 – 18). Nahass teaches the incorporation of a pitch-based carbon fiber in the manufacture of conductive polymers in order to modify or increase the conductivity of the conductive polymers to adjust sensitivity of the sensor (see col. 1, lines 15 – 39). The Court has held that the selection of a known material, which is based upon its suitability

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for the intended use, is within the ambit of one of ordinary skill in the art. See *In re Leshin*, 125 USPQ 416 (CCPA 1960) (see MPEP § 2144.07). Therefore, it would have been obvious to a person of ordinary skill in the art to provide for the claimed apparatus as recited in the claims.

Regarding claims 18, 19, 53 and 54, as discussed above, the cited prior art teaches all of the positively recited structure of the apparatus provided in the claimed method, which merely recites the conventional operation of that apparatus. Therefore, it would have been obvious to a person of ordinary skill in the art to perform the method recited in the instant claims upon the disclosed apparatus, as such is the intended operation of that apparatus.

#### ***Response to Arguments***

Applicant's arguments with respect to present claims have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian J. Sines, whose telephone number is (571) 272-1263. The examiner can normally be reached on Monday - Friday (11 AM - 8 PM EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read "Brian Kim". The signature is written in a cursive style with a large, looping initial "B" and a long, sweeping underline.